

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 99.28**WELDING INSPECTION REPORT****Resident Engineer:** Casey, William**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-029940**Date Inspected:** 23-Aug-2013**Project Name:** SAS Superstructure**OSM Arrival Time:** 600**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Steward Machine Co.**Location:** Birmingham AL**CWI Name:** Fred Hudson**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** E2 Shear Key Anchorages**Summary of Items Observed:**

Quality Assurance Inspector (QAI) Fritz Belford was present on the date and times noted above in order to observe the fabrication and Quality Control (QC) functions performed by Steward Machine Company for the E2 Shear Key Anchorages for the SFOBB project. Material Test Reports (MTRs) for all materials used have been reviewed and approved by others at the XKT shop in Vallejo California prior to shipping to Steward Machine Company. The following items were observed:

**Steward Machine - Plant 1:**

The QA performed a walkthrough at the shop to verify plates on site and to observe Steward Machine personnel at work machining and welding. Work performed at the Steward Machine shop as noted below:

**Welder Daniel Rowe #73:**

The welder was observed continue with welding the S10B Upper Saddle Assembly (Plates a2 thru d1) shear key side utilizing Welding Procedure Specification (WPS) P2-W126-B for Flux Core Arc Welding-Gas Shielded (FCAW-G) in the 1G position. Welding parameters were adjusted and monitored by Certified Welding Inspector (CWI) Fred Hudson who was onsite with the WPS as required by contract documents. The welding parameters were measured to be 280Amps, 29Volts with E70T-1 Class 1/16" diameter wire with a pre heat of over 70 degrees Fahrenheit. The welder was observed welding the assembly multiple interpass as sequenced earlier by the shop supervisor.

**Welder Jeff Hennington #476:**

The welder was observed continue with welding the S10B Upper Saddle Assembly (Plates a2 thru d1) shear key

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side utilizing Welding Procedure Specification (WPS) P2-W126-B for Flux Core Arc Welding-Gas Shielded (FCAW-G) in the 1G position. Welding parameters were adjusted and monitored by Certified Welding Inspector (CWI) Fred Hudson who was onsite with the WPS as required by contract documents. The welding parameters were measured to be 275Amps, 29Volts with E70T-1 Class 1/16" diameter wire with a pre heat of over 70 degrees Fahrenheit. The welder was observed welding the assembly multiple interpass as sequenced earlier by the shop supervisor.

Upper Saddle Assembly S10B as welded by welders #73 and #476 above includes plates S10B-d1, S10B-c1, S10B-b1, S10B-a1, S10B-b2, S10B-a2.

### Non-Destructive Testing (NDT)

The QA performed Magnetic Particle Testing (MPT) on the following:

- Plate S3B-c3 (MT Accept.. See report form TL-6028 for detailed information.).
- Plate S10C-a2 (MT Accept.. See report form TL-6028 for detailed information.).

Dimensional verification readings were taken by QC Inspector Cory Cardwell on the plates listed above, prior to performing the Magnetic Particle Testing (MPT).

The QA Inspector performed random dimensional verification readings on plates listed above prior to performing Magnetic Particle Testing (MPT).

### Plate Milling:

CNC Machine #176 milling plate S3C-g3. (Milling outside radius)  
CNC Machine #177 milling plate S4B-h4. (Milling outside radius)  
CNC Machine #211 milling plate S4C-c4 (Milling inside radius)  
CNC Machine #225 milling plate S3C-c3. (Milling inside radius)  
CNC Machine #230 milling plate S10C-a1. (Milling inside radius troughs)  
CNC Machine #240 milling plate S4B-d4. (Milling inside radius)  
CNC Machine #245 milling plate S3B-g3. (Milling inside radius)

The following plates were noted staged throughout the shop in various stages of processing.

### Bay 1 - Plates:

S3B-f3. Formed, stressed relieved and partially machined.  
S3C-f3. Formed, stressed relieved and partially machined.  
S4B-f4. Formed, stressed relieved and partially machined.  
S4C-f4. Formed, stressed relieved and partially machined.  
S3B-g3. Formed, stressed relieved and partially machined.

### Bay 2 – Plates:

S3B-h3. Formed, stressed relieved and partially machined.  
S4C-h4. Formed, stressed relieved and partially machined.  
S3C-a3. Formed, stressed relieved and partially machined.

### Bay 3 – Plates:

S4C-g4. Formed, stressed relieved and partially machined.  
S4C-e4. Formed, stressed relieved and partially machined.

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S4B-e4. Formed, stressed relieved and partially machined.

S3B-e3. Formed, stressed relieved and partially machined.

S3C-e3. Formed, stressed relieved and partially machined.

### Bay 4 & 5– Plates:

S10B-d1. Formed, stressed relieved and partially machined.

S10B-c1. Formed, stressed relieved and partially machined.

S10B-a1. Formed, stressed relieved and partially machined.

S10B-b1. Formed, stressed relieved and partially machined.

S10B-a2. Formed, stressed relieved and partially machined.

S10B-b2. Formed, stressed relieved and partially machined.

S4C-d4. Formed, stressed relieved and partially machined.

S10C-c1. Formed, stressed relieved and partially machined.

S10C-b1. Formed, stressed relieved and partially machined.

S10C-b2. Formed, stressed relieved and partially machined.

S4B-c4. Formed, stressed relieved and partially machined.

S4B-g4. Formed, stressed relieved and partially machined.

S10C-a2. Formed, stressed relieved and partially machined.

S3B-b3. Formed, stressed relieved and partially machined.

S3C-h3. Formed, stressed relieved and partially machined.

S3C-d3. Formed, stressed relieved and partially machined.

S4C-a4. Formed, stressed relieved and partially machined.

S3B-a3. Formed, stressed relieved and partially machined.

S3C-b3. Formed, stressed relieved and partially machined.

S3B-c3. Formed, stressed relieved and partially machined.

S4B-a4. Formed, stressed relieved and partially machined.

S4B-b4. Formed, stressed relieved and partially machined.

### Steward Machine - Plant 2:

The QA performed a walkthrough at the shop to verify plates on site and to observe Steward Machine personnel at work cutting and welding. No welding or cutting on contract items at the plant at this time. The Lower Saddle Welding Assembly was moved to Plant 1 earlier during the week and all pieces for the Upper and Lower Saddle Assemblies have been cut to size as required. Shop personnel are currently on other projects until the Lower Saddle Welding Jig is returned from Plant 1.

### Hardie Tynes:

The QA performed a walkthrough at the shop to verify plates on site and to observe Hardie Tynes personnel at work machining plates. Work performed at the Steward Machine shop as noted below:

The following plate was noted staged in the shop awaiting further processing.

S3B-d3. Formed, stressed relieved and partially machined.

S4C-b4. Formed, stressed relieved and partially machined.

No machining of plates by Hardie Tynes this day.

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### Summary of Conversations:

As required for scope of work.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Gary Thomas (916) 764 -6027 , who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Belford,Fritz	Quality Assurance Inspector
<b>Reviewed By:</b>	Foerder,Mike	QA Reviewer

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